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(This article belongs to the Section **Air Quality**)

Unmanned aerial vehicles (UAVs) play an increasingly important role in various areas of life, including in terms of protection and security. As a result of fires, volcanic eruptions, or other emergencies, huge amounts of toxic gases, dust, and other substances are emitted into the environment, which, together with high temperature, often leads to serious environmental contamination. Based on the available literature and patent databases, an analysis of the available UAVs models was carried out in terms of their applicability in air contaminated conditions in industrial areas, in the event of emergencies, such as fire, chemical contamination. The possibilities of using the devices were analyzed in terms of weather conditions, construction, and used materials in CBRN (chemical, biological, radiological, nuclear) threat situations. It was found that, thanks to the use of appropriate sensors, cameras, and software of UAVs integrated with a given system, it is possible to obtain information on air quality at a given moment, which is very important for the safety of people and the environment. However, several elements, including the possibility of use in acidification conditions, requires refinement to changing crisis conditions

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Internet of Things (IoT) has provided a promising opportunity to build powerful industrial systems and applications by leveraging the growing ubiquity of radio-frequency identification (RFID), and wireless, mobile, and sensor devices. A wide range of industrial IoT applications have been developed and deployed in recent years. In an effort to understand the development of IoT in industries, this paper reviews the current research of IoT, key enabling technologies, major IoT applications in industries, and identifies research trends and challenges. A main contribution of this review paper is that it summarizes the current state-of-the-art IoT in industries systematically.

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The low oil price environment is driving the oil and gas (O&G) industry to become more innovative and deploy smart field technologies, to increase operational and asset efficiency, minimize health, safety, and environmental (HSE) risks, improve asset portfolio, reduce capital and operation costs, and maximize capital productivity. The Internet of Things (IoT) is at the forefront of this digital transformation, enabling seamless real-time data collection, processing, and analysis from a range of equipment, processes, and operations to achieve these objectives. There are various operations/applications in the upstream, midstream, and downstream sectors (e.g., condition-based monitoring and location tracking) for which IoT-enabled solutions have a significant impact and offer a range of opportunities to increase socioeconomic benefits. However, there are several impediments (e.g., vulnerability to cyber attacks, lower technological readiness for deploying in zone-0 and zone-1 hazardous environments, unavailability of communication infrastructure, labor concerns, and maintenance and obsolescence) that slow the pace of adoption of IoT technologies for regular upstream, midstream, and downstream operations. This review article provides an overview and assessment of the role, impact, opportunities, challenges, and current status of IoT deployment in the O&G industry.

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One of the critical global environmental problems is human and ecological exposure to hazardous wastes from agricultural, industrial, military and mining activities. These wastes often include heavy metals, hydrocarbons and other organic chemicals. Traditional field and laboratory detection and monitoring of these wastes are generally expensive and time consuming. The synoptic perspective of overhead remote imaging can be very useful for the detection and remediation of hazardous wastes. Aerial photography has a long and effective record in waste site evaluations. Aerial photographic archives allow temporal evaluation and change detection by visual interpretation. Multispectral aircraft and satellite systems have been successfully employed in both spectral and morphological analysis of hazardous wastes on the landscape and emerging hyperspectral sensors have permitted determination of the specific contaminants by processing strategies using the tens or hundreds of acquired wavelengths in the solar

reflected and/or thermal infrared parts of the electromagnetic spectrum. This paper reviews the literature of remote sensing and overhead imaging in the context of hazardous waste and discusses future monitoring needs and emerging scientific research areas